

ABSTRACT

Methods and apparatus are disclosed for accumulating traffic information and distributing flow control information in a packet switching system. Traffic information is collected in multiple elements of the packet switching system. These multiple elements forward to collecting elements of the packet switching system indications of congestion and/or other types of information useful in determining traffic conditions within the packet switching system. The collecting elements manipulate the received indications of traffic conditions and generate flow control messages which are sent to individual sending components (e.g., I/O interfaces, line cards, ports, etc.) of the packet switching system. In one implementation, a switching element maintains for each destination a count of packets within itself which are addressed to the particular destination. Indications of this collected information is sent to all, or a subset of, the collecting switching elements of the packet switching system. These collecting elements accumulate the information received from multiple sources. The accumulated information is evaluated, and when a congestion condition is located or anticipated, then flow control messages are distributed to all, or a subset of, the packet sources (e.g., I/O interfaces, line cards, ports, etc.). In one implementation, traffic information for each destination is maintained in switching elements of the distribution stage of a packet switch fabric. This traffic information is periodically or asynchronously distributed to one or more final stage switching elements of the fabric which accumulated traffic information and identify congestion and non-congestion conditions. The final stage switching elements distribute flow control signals to packet sources based on the identified congestion and non-congestion conditions.

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